What is claimed is:

1. A process for preparing pulverulent ethylene-vinyl alcohol copolymers by free-radical polymerization of ethylene and one or more vinyl esters, and optionally further monomers copolymerizable therewith, subsequent hydrolysis of the thus obtained ethylene-vinyl ester copolymers to give ethylene-vinyl alcohol copolymers, characterized in that the ethylene-vinyl alcohol copolymer, after the hydrolysis, is precipitated from the alcoholic solution by means of cooling with a temperature gradient, and optional addition of water,
the temperature gradient in the case of ethylene-vinyl alcohol copolymers which derive from low molecular weight ethylene-vinyl ester copolymers having a weight-average molecular weight Mw of from 2000 to 100 000 g/mol being from -0.1°C/min to -10°C/min, and
the temperature gradient in the case of ethylene-vinyl alcohol copolymers which derive from high molecular weight ethylene-vinyl ester copolymers having a weight-average molecular weight Mw of > 100 000 g/mol being from -0.1°C/min to -1°C/min.

2. The process as claimed in claim 1, characterized in that cooling is effected to a temperature which is above the Tg of the solvent-containing ethylene-vinyl alcohol copolymer but below the melting point of the ethylene-vinyl alcohol copolymer.

3. The process as claimed in claim 1 or 2, characterized in that the high molecular weight ethylene-vinyl alcohol copolymer is first cooled to a temperature of from 40°C to 70°C with a temperature gradient of from -1°C/min to -10°C/min, and the cooling is subsequently

continued down to a temperature of from 10°C to 35°C at a lower temperature gradient of from -0.1°C/min to -1°C/min.

4. The process as claimed in claim 1 to 3, characterized in that the precipitation of the ethylene-vinyl alcohol copolymer is promoted by addition of water.

5. The process as claimed in claim 4, characterized in that the amount of water is from 0.3 to 5.0 times the weight of the ethylene-vinyl acetate copolymer used.

6. The process as claimed in claim 1 to 5, characterized in that the thus obtained powder is resuspended in water, solvent residues are optionally removed by distillation or stripping, and the pulverulent product is isolated by filtration.

7. Ethylene-vinyl alcohol copolymers obtainable by the process as claimed in claims 1 to 6, having an ethylene content in the copolymer of from 5 to 75 mol%.

8. Ethylene-vinyl acetate copolymers as claimed in claim 7, having a particle size, determined as the mean volume diameter Dv, of from 20 to 2000 μm.

9. Ethylene-vinyl alcohol copolymers as claimed in claim 7 or 8 having a complex melt viscosity of from 0.5 to 100 000 Pas (at 180°C; oscillating measurement at 1 Hz with plate/plate test system).

10. The use of the ethylene-vinyl alcohol copolymers as claimed in claim 7 or 9 for producing foils, films and laminates.

11. The use of the ethylene-vinyl alcohol copolymers as claimed in claim 7 to 9 for producing moldings.

12. The use of the ethylene-vinyl alcohol copolymers as claimed in claim 7 to 9 as coating compositions.

13. The use of the ethylene-vinyl alcohol copolymers as claimed in claim 7 to 9 as an additive for powder coatings.

14. The use of the ethylene-vinyl alcohol copolymers as claimed in claim 7 to 9 as adhesives.

15. The use of the ethylene-vinyl alcohol copolymers as claimed in claim 7 to 9 as binders in building materials.